

Amendment Dated June 17, 2008
Serial No. 10/616,621

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IN THE CLAIMS

Claim 1. (Currently Amended) A method of exchanging routing information between Virtual Private Network (VPN) sites, the method comprising the steps of:

receiving, by a network device, first routing information from a first VPN site, the first VPN site being a Virtual Router (VR)-based VPN site implemented using a VR-based VPN model, the first routing information being associated with a first VPN;

receiving, by the network device, second routing information from a second VPN site, the second VPN site being a Virtual-Routing and Forwarding (VRF)-based VPN site implemented using a VRF-based VPN model, the second routing information also being associated with the first VPN; and

storing the first routing information and the second routing information together in a common routing table for the first VPN.

Claim 2. (Currently Amended) The method of claim 1, wherein the routing table or entries in the routing table ~~are~~ is used to facilitate transmission of data between the first VPN site and the second VPN site.

Claim 3. (Previously Presented) The method of claim 1, further comprising utilizing the routing table by the network device to facilitate transmission of data between the first VPN site and the second VPN site.

Claim 4. (Currently Amended) The method of claim 1, further comprising transmitting, by the network device, the first routing information to the second VPN site.

Claim 5. (Currently Amended) The method of claim 1, further comprising transmitting, by the network device, the second routing information to the first VPN site.

Claims 6-7. (Canceled)

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Claim 8. (Currently Amended) The method of claim 1, wherein the first routing information is associated with a first virtual router protocol connection, the first virtual router protocol connection being is based on at least one of Open Shortest Path First (OSPF), Integrated Intermediate System to Intermediate System (Integrated IS-IS), Routing Information Protocol (RIP), and Border Gateway Protocol (BGP), which is used to exchange the first routing information with the first VPN site over the first VPN.

Claim 9. (Currently Amended) The method of claim 1, wherein the second routing information is associated with a second virtual router protocol connection between the second VPN site and the network device, the second protocol connection being is based on MultiProtocol Border Gateway Protocol (MP-BGP), the second protocol connection being used to exchange the second routing information with the second VPN site over the first VPN.

Claim 10. (Original) The method of claim 1, wherein the routing table comprises entries comprising a VPN identifier associated with the first routing information, and a VPN identifier associated with the second routing information.

Claim 11. (Original) The method of claim 10, wherein the entries further comprise the first routing information and the second routing information.

Claim 12. (Previously Presented) The method of claim 11, wherein the first routing information is a route from the network device to the first VPN site, and wherein the second routing information is a Border Gateway Protocol (BGP) next hop attribute and MultiProtocol Label Switching (MPLS) VPN label.

Claim 13. (Previously Presented) The method of claim 12, further comprising the steps of:
establishing a first secure tunnel between the first VPN site and the network device, and
wherein the step of receiving first routing information utilizes the first secure tunnel; and
establishing a second secure tunnel between the second VPN site and the network device,
and wherein the step of receiving second routing information utilizes the second secure tunnel.

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Claim 14. (Currently Amended) A method of interconnecting a Virtual Private Network (VPN) tunnel between a first VPN site implementing a Virtual Router based VPN (VR-based VPN), and a second VPN site implementing a VPN Routing and Forwarding table based VPN (VRF-based VPN), the method comprising the steps of:

- collecting routing information from the first VPN site implementing the VR-based VPN;
- collecting routing information from the second VPN site implementing the VRF-based VPN;
- correlating the routing information from the VR-based VPN and the routing information from the VRF-based VPN; and
- storing the correlated routing information in a VPN routing information base.

Claim 15. (Original) The method of claim 14, further comprising the step of:
disseminating the correlated routing information to the VR-based VPN and the VRF-based VPN.

Claim 16. (Currently Amended) The method of claim 14, further comprising the steps of:
receiving a data packet having a header from the first VPN site implemented using the VR-based VPN;

- ascertaining routing first destination information from the header;
- obtaining first correlated routing information from the VPN routing information base based on the first destination information; and
- adding second destination information to the data packet from the modifying the header using the correlated routing information to enable the data packet to be forwarded toward the second VPN site implemented using the VRF-based VPN.

Claim 17. (Currently Amended) The method of claim 16, further comprising the step of:
transmitting the data packet ~~with the modified header~~ to the second VPN site implemented using the VRF-based VPN.

Claim 18. (Currently Amended) The method of claim 14, further comprising the steps of:

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receiving a packet having a header from the second VPN site implemented using the VRF-based VPN;

ascertaining ~~routing~~ third destination information from the header;

obtaining second correlated routing information from the VPN routing information base based on the third destination information; and

adding fourth destination information to the data packet from the modifying the header using the correlated routing information to enable the data packet to be forwarded toward the first VPN site implemented using the VR-based VPN.

Claim 19. (Currently Amended) The method of claim 18, further comprising:

transmitting the data packet ~~with the modified header~~ to the first VPN site implemented using the VR-based VPN.

Claim 20. (Currently Amended) The method of claim 14, further comprising the step of:

translating quality of service information for packets transmitted between the first VPN site implemented using the VR-based VPN and the second VPN site implemented using the VRF-based VPN.

Claim 21. (Currently Amended) The method of claim 14, further comprising the step of:

transmitting the first correlated routing information to a network device configured to handle data traffic on the VPN tunnel between the first VPN site implementing the VR-based VPN and the second VPN site implementing the VRF-based VPN.

Claims 22-23. (Canceled)

Claim 24. (Currently Amended) A Virtual Router – Virtual Routing and Forwarding (VR-VRF) network device, comprising

a first protocol connection for interfacing with a first Virtual Private Network (VPN) tunnel instantiated according to a Virtual Router (VR)-based VPN model the first protocol connection being associated with a first VPN;

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a second protocol connection for interfacing with a second VPN tunnel instantiated according to a Virtual Routing and Forwarding (VRF)-based VPN mode the second protocol connection being associated with the first VPN;

a routing table for the first VPN configured to correlate routing information from the first VPN tunnel with routing information from the second VPN tunnel.

Claim 25. (Previously Presented) The network device of claim 24, wherein the routing table contains entries; each entry comprising a first tunnel VPN ID, a first tunnel route information, a second tunnel VPN ID, and a second tunnel route information.

Claim 26. (Canceled)

Claim 27. (Previously Presented) The network device of claim 25, wherein the routing table contains a virtual router VPN identifier, a virtual router route information, a VRF VPN identifier, and a Border Gateway Protocol (BGP) next hop and MultiProtocol Label Switching (MPLS) VPN label.

Claim 28. (New) A method of exchanging routing information between Virtual Private Network (VPN) sites, the method comprising the steps of:

receiving, by a network device, first routing information from a first VPN site, the first VPN site being a Virtual Router (VR)-based VPN site implemented using a VR-based VPN model, the first routing information being associated with a first VPN;

receiving, by the network device, second routing information from a second VPN site different than the first VPN site, the second VPN site being a Virtual-Routing and Forwarding (VRF)-based VPN site implemented using a VRF-based VPN model, the second routing information also being associated with the first VPN; and

storing the first routing information and the second routing information together in a common routing table for the first VPN to enable the first VPN site and second VPN site to communicate with each other over the first VPN.